

## PATENT ABSTRACTS OF JAPAN

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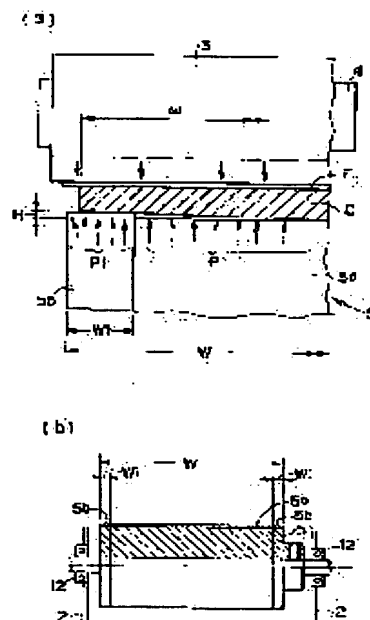
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## (54) ROLLER TYPE LAMINATING DEVICE

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a roller type laminating device for preventing the generation of defective sections on the edge along the carrying direction by generating the uniform pressure all over the width direction of a recording medium on a nip section between a heating roller and a platen roller without increasing the overall length of the platen roller.

**SOLUTION:** A card C is carried to a nip section between a heating roller 3 and a platen roller 5, and the thermal transfer of a film F is carried out by pressurizing and heating in a roller type laminating device, and the device is provided with the width direction dimension W slightly larger than the width dimension (w) of the card C crossing the carrying direction, and an elastically deformed layer 5a is formed on the outer peripheral face, and step sections 5b of the given width W1 are formed respectively from their edges on the outer peripheral face.



## LEGAL STATUS

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**CLAIMS**

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**[Claim(s)]**

[Claim 1] In order to carry out a heating imprint to the heating imprint side of the record medium which includes a card object using the film in which the resin coat layer of light transmission nature was formed on the base film It conveys in the nip section between a heating roller and a platen roller with a conveyance means. The feed zone which supplies said film from the roll film which is roller type lamination equipment which performs said heating imprint with pressurization and heating, and wound said film in the shape of a roll, While having a bigger width method for whether it being \*\*\* than the width method of the film supply means which consists of the rolling-up section which rolls round said film, and the interior of a proposal which shows said film to said nip section, and said record medium which intersects perpendicularly in said direction to convey While using said platen roller which formed the elastic-deformation layer of a predetermined diameter in the peripheral face, it is roller type lamination equipment characterized by forming, respectively about the level difference section of a bigger diameter than said predetermined diameter by the predetermined width of face from the edges-on-both-sides section of said elastic-deformation layer.

[Claim 2] Roller type lamination equipment according to claim 1 characterized by forming said elastic-deformation layer from the silicone rubber of a predetermined degree of hardness which is excellent in thermal resistance.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to roller type lamination equipment.

[0002]

[Description of the Prior Art] It is known that the recording surface color-printed by the record medium with idye sublimation printer equipment has unstable plasticity chemically. For this reason, when the plastics rubber is put, for example on the recording surface, a print color will decolorize under the effect of the contained plasticizer. Then, after printing each coloring-material layer, he is trying to patch the protective layer [ PURIKATTO / record medium / protective layer / equipment / the same size as drawing and a record medium ].

[0003] Or he is trying to aim at the above-mentioned decolorization prevention by preparing a protective layer by the overlay which carries out sequential formation of each coloring-material layer of YMC, and the transparent protective layer, and forms a protective layer with the equipment same after color printing on a base film. Or in order to overlay a protective layer on the front reverse side of record media, such as an information card, so that JP,08-230235,A and JP,10-71789,A may see, it is proposed also about equipment equipped with the reversal device.

[0004]

[Problem(s) to be Solved by the Invention] As mentioned above, when the device which overlays a protective layer is described with reference to a drawing, drawing 9 (a) is the appearance perspective view having shown the principle of operation of an overlay device. In this Fig., Card C is conveyed in the direction D of an arrow head in the road [ conveyance ] it was formed between the non-illustrated conveyance roller and the idle roller. Moreover, the heating roller 3 by which a rotation drive is carried out counters a platen roller 5, and is prepared in the surroundings of the rod-like heater 4. The film F in which the follow gram layer for the resin coat layer Fa of the light transmission nature which is a protective layer, or forged prevention was formed on the base film Fb is made to be placed between the nip sections between rollers. It is constituted so that it may send out taking the synchronization with a card bearer rate on Card C and the heating imprint of the resin coat layer Fa or a follow gram layer may be performed.

[0005] Since the peripheral face of a heating roller 3 and a platen roller 5 is made into a smooth cylinder side like the illustration to drawing 9 (c) and it has the width method W at this time, a heating roller 3 will be moved in the direction of an arrow head, the repulsive force accompanying the elastic deformation of the silicone rubber layer prepared in the platen roller 5 will occur in the condition of having inserted Card C and Film F in the nip section, and a pressure P will be given to a card C rear face. Since this pressure P deforms so that a rubber layer may escape in the direction of a side face on both sides of the direction of width-of-face w, the pressures P1 and P2 of both sides become below the pressure P, and it becomes impossible to make them into the uniform pressure P over the whole cross direction.

[0006] For this reason, the problem which the deficit sections K and K of the resin coat layer Fa generate on both sides of the direction of width-of-face w like illustration is shown in drawing 9 (b).

[0007] Moreover, like illustration in the important section enlarged drawing having shown the principle of operation of the overlay device of drawing 10 (b), if Film F is rolled round in the direction of an arrow head from the back end section Cb of Card C after a heating imprint, the weld flash B of the resin coat layer Fa will occur [ in the top view of the card C of drawing 10 (a) ] towards the backside of the conveyance direction from the back end section Cb like illustration. This weld flash B is because a protective layer is removed from a base film

too much. The overcoat equipment for preventing such weld flash generating is proposed in JP,08-276496,A. According to this proposal, a cutter is moved according to the card conveyance force for the cure after weld flash generating, a cutter is dropped after card conveyance, and weld flash was symptomatic treatment-[ a thing ]-so to speak cut.

[0008] It is next to impossible to constitute a film supply means so that Film F may be moved by the back-end section Cb to the acute angle after a heating imprint, since a film-transport path has the limit on a drive on arrangement, although it becomes extent which can disregard whether weld-flash generating decreases extremely, without removing a protective layer too much from a base film if Film F is moved by the back-end section Cb to the acute angle after a heating imprint like the illustration to drawing 10 (c) on the other hand.

[0009] therefore, even if it accomplish this invention in view of the above-mentioned trouble described with reference to drawing 9 (b) and do not lengthen the overall length of a platen roller, it aim at offer of the roller type laminator equipment which can prevent generating of the deficit section generate at the edge which meet in the conveyance direction by make it the uniform pressure P over the whole direction of width of face w of a record medium in the nip section between a heating roller and a platen roller.

[0010]

[Means for Solving the Problem] In order to carry out a heating imprint to the heating imprint side of the record medium which includes a card object using the film which formed the resin coat layer of light transmission nature on the base film according to this invention in order to solve an above-mentioned technical problem and to attain a technical problem It conveys in the nip section between a heating roller and a platen roller with a conveyance means. The feed zone which supplies said film from the roll film which is roller type lamination equipment which performs said heating imprint with pressurization and heating, and wound said film in the shape of a roll, While having a bigger width method for whether it being \*\*\*\* than the width method of the film supply means which consists of the rolling-up section which rolls round said film, and the interior of a proposal which shows said film to said nip section, and said record medium which intersects perpendicularly in said direction to convey while using said platen roller which formed the elastic-deformation layer of a predetermined diameter in the peripheral face — the level difference section of a bigger diameter than said predetermined diameter — a part for the predetermined width of face from the edges-on-both-sides section of said elastic-deformation layer — it is characterized by forming, respectively.

[0011] Moreover, it is characterized by forming said elastic-deformation layer from the silicone rubber of a predetermined degree of hardness which is excellent in thermal resistance.

[0012]

[Embodiment of the Invention] Below, with reference to an accompanying drawing, it explains about each suitable operation gestalt of this invention.

[0013] Drawing 1 shows the situation immediately after carrying out the heating imprint of the follow gram layer for forged prevention, or the resin coat layer of light transmission nature to the heating imprint side of Card C, after the card C which is the front view having shown the main internal configurations of lamination equipment 1, and is a record medium after being printed by the printer equipment of a sublimation mold from drawing left-hand side is sent to the conveyance way H from arrow-head D1 direction. In addition, it cannot be overemphasized that printing performed at the last process which there are various certificates of entering [ for example, ] individual personnel, individual humanity news cards, a driver's license certificate, etc. as a record medium, and is sent into this lamination equipment 1 may be printing not only by the above-mentioned sublimation mold printing but all airline printers.

[0014] In this Fig., the conveyance way H is formed so that it may be inserted with the conveyance roller 10 with which much the idlers 11 and driving force of broken-line illustration are transmitted, it carries out sequential conveyance of the card C which has predetermined rigidity at an arrow head D1 and D 2-way, and it is constituted so that it may discharge from arrow-head D3 direction to the equipment exterior. The cylindrical heater 4 is fixed to a core at the abbreviation interstitial segment of this conveyance way H, and while being prepared so that the rise-and-fall drive of the heating roller 3 by which a rotation drive is carried out around it may be carried out in the direction of arrow-head A, it is prepared in the lower part which counters this heating roller 3 so that the rotation drive of the platen roller 5 which prepared the silicone rubber layer which is excellent in thermal resistance in the peripheral face may be carried out by bearing 12.

[0015] Moreover, as stated with reference to drawing 9 (a), the film F illustrated by the drawing destructive line The thing in which the follow gram layer for the resin coat layer Fa of the light transmission nature which is a protective layer, or forged prevention was formed on the base film Fb It is prepared so that it may become

exchangeable about the roll film wound in the shape of a roll. After setting to the feed zone 6 arranged in the upper left of the body 2 of equipment and setting so that many film guide shafts 8 may be met like illustration of Film F As it rolls round in the rolling-up section 7 which rolls round what became only a base film by hot printing and Film F is guided between a heating roller 3 and a platen roller 5, it is constituted so that it may be in the condition of illustration at drawing 9 (a). Moderate tension is generated by Film F in the rolling-up direction for slack prevention, and after striking so that it may mention later, it enables it to return to the original condition within a short time at this time.

[0016] Hot printing of the protective layer is carried out by a heating roller 4 driving to the position in readiness of illustration by energization to a non-illustrated elevator style, after heating imprinting to the card C of Film F, and driving by the above configuration, in the hot printing location later mentioned for a heating imprint.

[0017] Thus, the 1st rocking member driven between the position in readiness where the configuration section evacuates Film F from the conveyance way H since it exfoliates from a heating imprint side, and the active position which strikes Film F with sufficient vigor in the direction of an arrow head is arranged from the back end section of the card C by which hot printing is carried out, being conveyed. This 1st rocking member is setting the support section 13 for the member 14 processed like illustration as the rotation core. For this reason, while the support section 13 of a member 14 is supported to revolve by the body 2, the monotonous configuration section with the same width method as the back end section of Card C is really formed.

[0018] as an energization means to generate the energization force of moving this 1st rocking member to the position in readiness of illustration — a spring 15 — electromagnetism — it is prepared between the actuators of a solenoid 16 and he is trying to drive to the active position which resists the energization force by energization to a solenoid 16, and mentions a member 14 later

[0019] Drawing 2 is the front view having shown the drive system of the lamination equipment of drawing 1, and shows driving from the drive motor 18 with each conveyance roller 10, and common platen roller 5 and heating roller 3. In this Fig., the gear which showed the center circle to the output shaft of a drive motor 18 with the alternate long and short dash line in drawing is being fixed. Power transfer should do to the conveyance roller 10 of the upstream through the gear train 19 engaged on this gear. It is constituted so that power transfer may be made by a platen roller 5 and the conveyance roller 10 of the downstream through the gear train 20 similarly engaged on a gear, and it is constituted so that the power transfer to a heating roller 3 may be further made through the gear train 21.

[0020] Drawing 3 is the appearance perspective view having shown the situation of a heating roller 3, the annular bearing 22 of a Uichi Hidari pair is formed in the body 2 and the base 9 like illustration, and the heating roller 3 is formed in the direction of an arrow head possible [ a rotation drive ] by this annular bearing 22. Moreover, the rod-like heater 4 is being fixed.

[0021] The engagement device for carrying out power transfer from the gear train 20 side to the gear train 21 of drawing 2 is shown, the gear is prepared in the circumference of a lever 26 free [ rotation ] like illustration, and drawing 4 is carrying out migration energization of the lever 26 in the upper part. Thus, when it is returned to a predetermined location after the heating roller 4 was moved to the upper part from the predetermined location for the set of Film F, it is constituted so that it can engage again.

[0022] Drawing 5 and drawing 6 are the explanatory views of the 1st rocking member of operation explained above. In both drawings, if the sign same about a component part [ finishing / explanation / already ] is attached and explanation is omitted, Card C will be conveyed [ in / first / drawing 5 (a) ] in the arrow-head D1 direction, and if the nip section between a heating roller 3 and a platen roller 5 is reached, a heating roller 3 will descend in the arrow-head A1 direction. Following this, in drawing 5 (b), the temperature rise of the heating roller 4 is carried out by the energization to a heater 3, and the heating imprint of the transparence resin layer of Film F is performed on Card C. After a heating imprint is completed to the nip section by drawing 5 (c), a heating roller 4 goes up to an arrow-head A 2-way. On the other hand, Card C and Film F are conveyed and exfoliate.

[0023] Next, when Card C is further conveyed by the arrow-head D 2-way in a direction and the back end section Cb of Card C is located in 1 to 2 just behind configuration section 14a of a member 14mm in drawing 6 (a) electromagnetism — energization to a solenoid 16 is performed, configuration section 14a is moved with sufficient vigor to drawing 6 (b) up like illustration, and a film is turned up and struck. Consequently, generating of weld flash can be prevented effectively. the energization to a solenoid stops next — having — an operation of a spring 15 — electromagnetism — configuration section 14a will descend and it will return to the location of illustration at drawing 6 (c) because the actuator of a solenoid 16 returns to the location of a basis.

[0024] As mentioned above, it has checked abolishing weld flash generating by moving a film by the acute angle

from the back end section Cb side of the card C which is a record medium after a heating imprint about Film F, without [ exceptional in supply and the device for rolling round ] changing.

[0025] Next, drawing 7 is the front view having shown the outline configuration of the laminator equipment of another operation gestalt, and if it attaches the sign same about a component part [ finishing / explanation / already ] and explanation is omitted in this Fig. 1st member 14b which equipped the edge with configuration section 14a which strikes a film while the 2nd rocking member is installed from the support section 13 supported to revolve by the body 2, The member 14 which formed 2nd member 14c equipped with the cam follower 31 in upper limit while being applied and installed in the diagonal right from the support section 13, The tension spring 115 with which the end was fixed to the body 2 and the other end was fixed to the member 14 since the energization force of making a cam follower 31 following a cam 30 was generated while moving this member 14 to the position in readiness of continuous-line illustration, Carry out the rotation drive of the cam 30 by energization to the motor 116 of broken-line illustration, and it is constituted so that configuration section 14a may move to the location of broken-line illustration rapidly because a cam follower 31 falls to crevice 30b formed in cam side 30a. It is constituted so that Film F may be struck because a cam drives by rotation of a motor 116 and a cam follower falls as mentioned above. You may make it drive a rocking member by making a motor 116 into a driving source as mentioned above.

[0026] Next, drawing 8 (a) is the important section enlarged drawing having shown signs that Card C and Film F were pinched in the nip section which consists of peripheral faces of a heating roller 3 and a platen roller 5. Moreover, drawing 8 (b) is the half section Fig. of a platen roller. The front face of a heating roller 3 is constituted so that it may excel in thermal resistance and may become a smooth cylinder side, and it enables it to finish an imprint side flat and smooth in drawing 8. the platen roller 5 with which this heating roller 3 counters this like illustration, and abbreviation — it has the same width method W. Moreover, the width method w of Card C is slightly set up small from the width method W of a platen roller 5.

[0027] Moreover, in drawing 8 (b), in the condition of having inserted Card C and Film F, the silicone rubber layers 5a and 5b prepared in the platen roller 5 form the level difference section of the width method W1 like illustration, and make silicone rubber layer 5b of the both sides of a platen roller 5 a little the major diameter (it is about 0.05mm at a radius). Consequently, the rear face of Card C can make now the pressures P1 and P1 of crosswise both sides into the same pressure P as the width method W at the time of \*\*\*\*\*, and can make now the pressure P by the repulsive force accompanying elastic deformation into the uniform pressure P over the whole cross direction. Consequently, it was cancelable that the deficit section K of a resin coat layer Fa like illustration occurs in drawing 9 (b).

[0028] As mentioned above, big effectiveness was able to be acquired at the very easy processing process of adding the polish process which prepares the level difference section in a silicone rubber layer. That is, in order to make the above-mentioned pressure P impress to Card C, it is common knowledge in the printing industry etc. that what is necessary is just to use the platen roller which set the excessive width method as both sides, and reduced the pressure reduction by recess, but when the width method of a platen roller sets up too many in this way, there is un-arranging [ which will affect the conveyance way across which it faces by the body 2 as a result causes enlargement of equipment ]. Therefore, if the deficit section is cancelable by preparing the level difference section simply, a problem will be lost in any way.

[0029]

[Effect of the Invention] As explained above, even if it does not lengthen the overall length of a platen roller according to this invention, the roller type laminator equipment which can prevent generating of the deficit section generated at the edge which meets in the conveyance direction by generating the uniform pressure over the whole cross direction of a record medium in the nip section between a heating roller and a platen roller can be offered.

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1] It is the front view having shown the main internal configurations of lamination equipment 1.

[Drawing 2] It is the front view having shown the drive system of the lamination equipment of drawing 1.

[Drawing 3] It is the appearance perspective view of the circumference of a heating roller.

[Drawing 4] It is the front view having shown a part of gear train 20 and gear train 21.

[Drawing 5] (a) - (c) — the 1st rocking member is the explanatory view of operation located in an evacuation location.

[Drawing 6] (a) - (c) — the 1st rocking member is the explanatory view of operation located in an active position.

[Drawing 7] It is the front view having shown the main internal configurations of the lamination equipment 1 of another operation gestalt equipped with the 2nd rocking member.

[Drawing 8] (a) It is the important section enlarged drawing and the half section Fig. of the (b) platen roller having shown signs that Card C and Film F were pinched in the nip section which consists of peripheral faces of a heating roller 3 and a platen roller 5.

[Drawing 9] (a) They are the appearance perspective view of the conventional heating copy, the top view of the card C which has (b) deficit section K, and the sectional view of the nip section which consists of a heating roller 3 of (c) former, and a peripheral face of a platen roller 5.

[Drawing 10] (a) They are the top view of the card C which has the weld flash B by the conventional heating copy, and the explanatory view of the explanatory view of the conventional heating copy of operation, and (b) (c) trimming of operation.

### [Description of Notations]

1 Lamination Equipment

2 Body

3 Heating Roller

4 Cylindrical Heater

5 Platen Roller

6 Feed Zone

7 Rolling-Up Section

8 Guide Shaft (Interior of Proposal)

10 Conveyance Roller

11 Idle Roller

13 Support Section

14 Member

15 Spring

16 Electromagnetism — Solenoid

18 Motor

19, 20, 21 Gear train

22 Annular Bearing

30 Cam

F Film

H Conveyance way

C Card (record medium)

w Card width method  
W Platen roller width method

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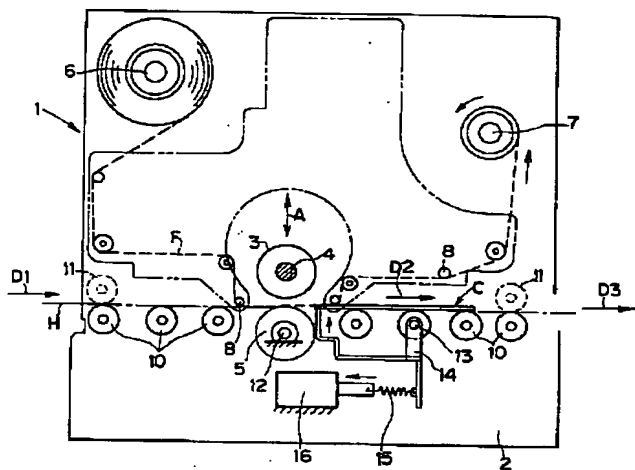
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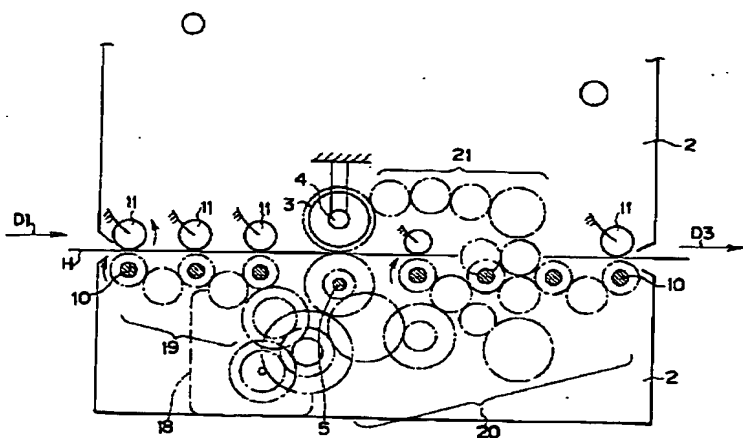
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## DRAWINGS

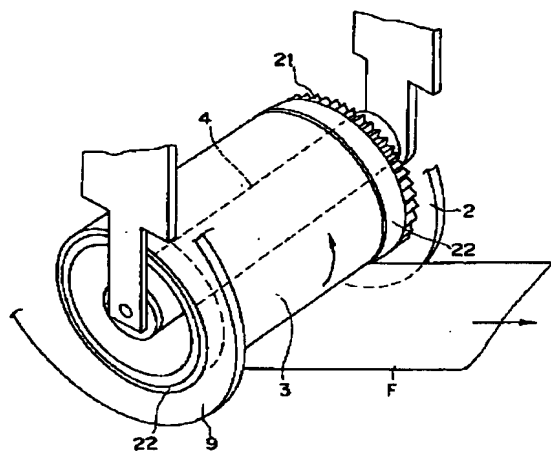
[Drawing 1]



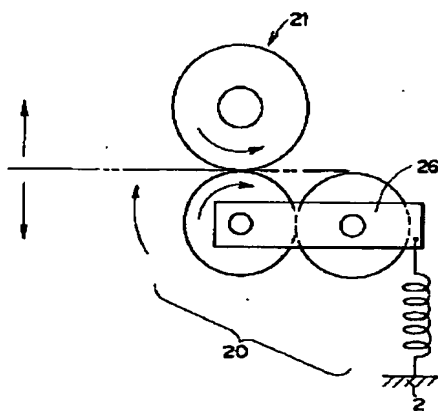
[Drawing 2]



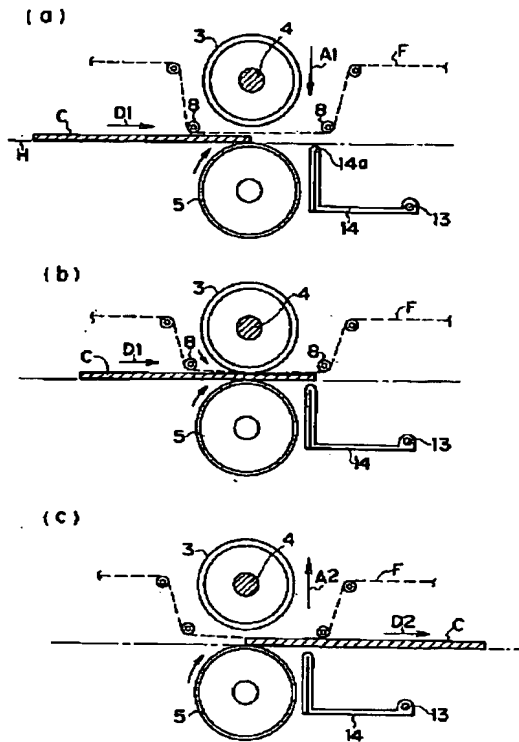
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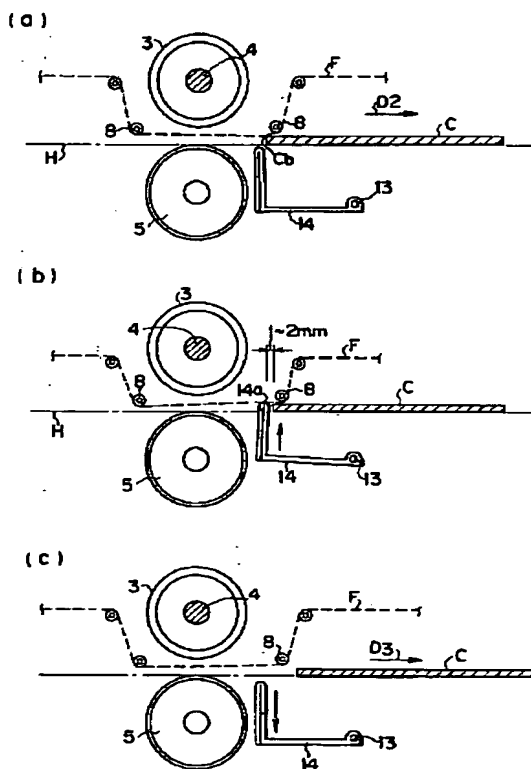
[Drawing 4]



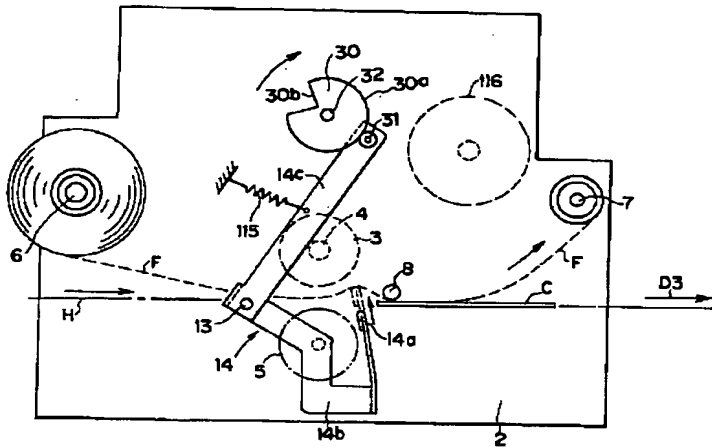
[Drawing 5]



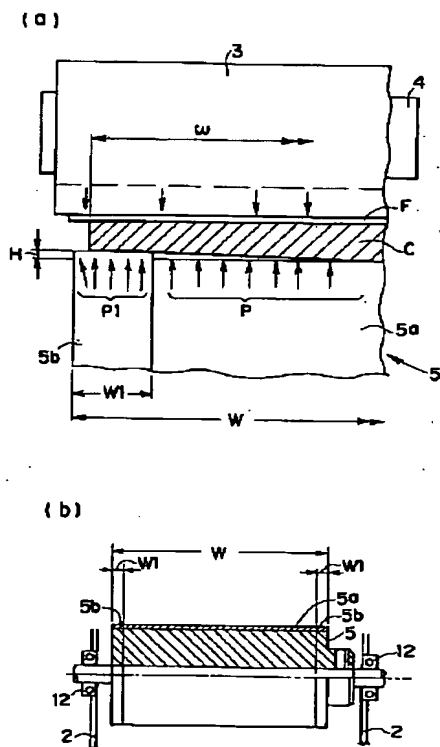
[Drawing 6]



[Drawing 7]

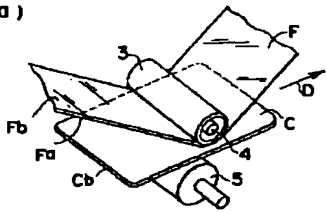


[Drawing 8]

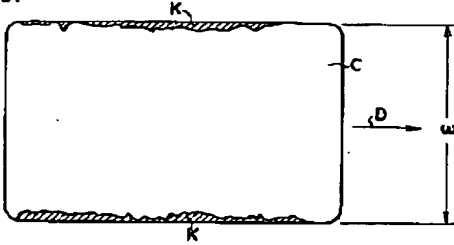


[Drawing 9]

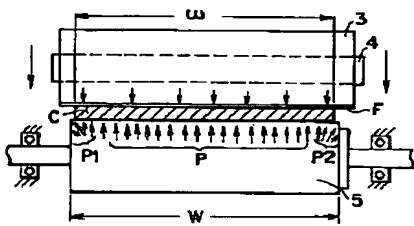
(a)



(b)

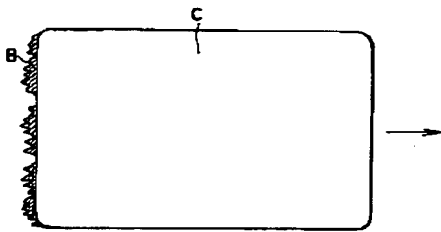


(c)

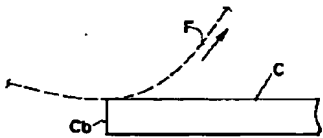


[Drawing 10]

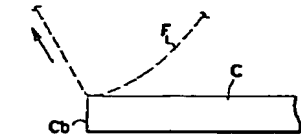
(a)



(b)



(c)



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